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- Hughes, E. C.  
1966 "The making of a physician; general statement of ideas and problems." Pp. 96-9 in W. R. Scott and E. H. Volkart (eds.), *Medical Care*. New York: Wiley.
- Kemeny, John G. and J. L. Snell  
1960 *Finite Markov Chains*. Princeton: Van Nostrand.
- Mayer, Thomas F.  
1972 "Models of intergenerational mobility." Pp. 308-57 in J. Berger, M. Zelditch, Jr. and B. Anderson (eds.), *Sociological Theories in Progress*, Vol. 2. Boston: Houghton Mifflin.
- Merton, Robert K., G. Reader and P. L. Kendall  
1957 *The Student Physician*. Cambridge, Ma.: Harvard University Press.
- Mumford, Emily  
1970 *From Students to Physicians*. Cambridge, Ma.: Harvard University Press.
- Olmsted, Ann and M. Paget  
1969 "Some theoretical issues in professional socialization." *Journal of Medical Education* 44:663-9.
- Shuval, Judith T.  
1973 "Manpower pools for three health professions in Israel." *Social Science and Medicine* 7:893-910.
- 1975a "Socialization of health professionals in Israel: early sources of congruence and differentiation." *Journal of Medical Education* 50:443-57.
- 1975b "From 'boy' to 'colleague': processes of role transformation in professional socialization." *Social Science and Medicine* 9:413-20.
- Shuval, Judith and Israel Adler  
1977 "Processes of continuity and change during socialization for medicine in Israel." *Health and Social Behaviour* 18:112-24.
- Singer, Burton and Seymour Spilerman  
1976 "Representation of social processes by Markov models." *American Journal of Sociology* 82:1-54.

## STRATIFICATION IN A DUAL ECONOMY: A SECTORAL MODEL OF EARNINGS DETERMINATION\*

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*We examine the importance of industrial sectors as hypothesized by the dual economy literature on the process of earnings determination. Using NORC survey data, we find substantively and statistically significant differences in labor force composition and economic status between core and periphery industrial sectors. Our application of a covariance regression model to these data demonstrates that the sectoral differentials in earnings cannot be explained away by differences in labor force composition and that there exist significant sectoral variations in the way that worker characteristics are rewarded. The findings are interpreted as evidence of the importance of structural factors for earnings determination. The critical implications of such findings for neoclassical research traditions in social stratification are noted.*

### MODELS OF STRATIFICATION AND EARNINGS

Much recent American stratification research has been characterized by an individualistic conception of the relationship

between labor force participation and social rewards. This approach rests on the belief that workers are placed within the socioeconomic order through a competitive process in which skills and abilities of differing value and scarcity are carefully identified, evaluated, and matched with societal needs (Pease et al., 1970). In the study of occupational placement, this conception derives from a functional theory of stratification which posits a competitive matching between the functional importance of occupational roles and the skills and training of job seekers (Parsons, 1940; Davis and Moore, 1945). This theory provides the intellectual un-

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derpinnings for research which represents occupations as prestige levels and which interprets occupational prestige as a measure of individual success or failure in an attainment process.

Much of the recent analysis by economists of earnings determination likewise has been characterized by an individualistic conception derived from neoclassical economic theories.<sup>1</sup> In this, the human capital perspective, the rational worker invests in training which will maximize the economic return (earnings) on investments (Becker, 1964; Mincer, 1974) while free competition among firms for labor skills guarantees a price for various labor types which is equal to the marginal productivity of that labor.<sup>2</sup>

Others have noted the similarities between the functional theory of occupations and neoclassical economic theories (see e.g., Bibb and Form, 1977; Grandjean, 1975; Horan, 1978). The point of interest here is less the similarities in the theories themselves than similarities in their implications for empirical research. These neoclassical theories of social structure include both individual participants in the socioeconomic attainment process and a structural context consisting of a set of interrelated employers and firms. The structural context, however, is such that when it is assumed to be working according to the theoretical specifications, it need not be included in analyses. Like Adam Smith's "invisible hand" the competitive structure presumed by neoclassical theory guarantees that differential placement in the socioeconomic order is accomplished in a manner such that this placement is a reflection of a worker's basic value to the system. From this perspective, inequality of earnings must be a reflection of the dispersion of individual resources; low prestige and poverty wages must be the result of resource insufficiency; sporadic employment and job instability must be the products of inade-

quate commitment to work or a weak achievement motivation. In short, socioeconomic success or failure is tied directly to the characteristics brought into the marketplace by the individual workers.

Research deriving from neoclassical conceptions is individualistic in the sense that its explanatory variables tend to be restricted to personal attributes such as formal schooling, work experience, or family background characteristics. Recent attempts to broaden the scope of models of earnings determination (Stolzenberg, 1975; Althausen and Kalleberg, 1977; Osterman, 1975; Kalachek and Raines, 1976; Hudis and Kalleberg, 1977; Bibb and Form, 1977; Spilerman, 1977; Hodson, 1977) have done so by adding to these individual characteristics some supraindividual variables relating to the structure of the earnings determination process—a trend which we will continue in the analysis below.

Although working primarily within the neoclassical framework, Stolzenberg (1975) suggests that labor market competition is not completely uninhibited but is segmented according to occupation. He argues that because of the occupation-specific nature of worker "investments" in preparation for specialized jobs, such training produces "... a strain toward segmentation of labor market competition along occupational lines" (Stolzenberg, 1975:647). In addition to occupational wage effects, Stolzenberg's analysis of census data for employed males also reports substantial industry effects on wages which are interpreted in terms of interindustry variation in the supply and demand for the factors of production.

Osterman (1975) also has investigated the economic implications of segmentation along occupational lines. Using data from the 1967 Survey of Economic Opportunity, he finds that human capital variables tend to explain variations in earnings among jobs in the "primary segment," but not among jobs in the "secondary segment." Analyzing data from the National Longitudinal Surveys, Kalachek and Raines (1976) find that while human capital variables play a major role in the determination of earnings, occupational and industrial factors have an important effect

<sup>1</sup> Much of the sociological research on earnings determination also has been individualistic in orientation and execution. The recent efforts of Hauser and Featherman (1977), Sewell and Hauser (1975), and Duncan et al. (1972) are in this tradition.

<sup>2</sup> See Thurow (1975:211–30) for a detailed discussion of marginal productivity theories.

on the rate of return on the "human capital stock."

Bibb and Form (1977) juxtapose the human capital model of earnings determination with a "structural" model which includes information on industrial and occupational factors as well as characteristics of the labor force. Analyzing data on the earnings of full-time blue-collar workers, they use regression procedures to compare the explanatory power of human capital variables with structural variables pertaining to industrial and occupational characteristics. They report that their final model accounts for nearly three times as much variance in blue-collar earnings as their human capital model alone.

Stolzenberg (1975), Bibb and Form (1977), and Kalachek and Raines (1976) provide evidence on the importance of organizational characteristics for individual earnings determination, and Bibb and Form raise some important questions about the empirical adequacy of individualistic models. However, the need remains to forge a systematic link between structural theories of earnings determination and the empirical analysis of earnings data. In particular, the nature of the relationship between individual factors and structural factors warrants further consideration. Neoclassical approaches to income determination presume that worker characteristics are paramount in this process and that the income returns to individual characteristics remain fixed across structural settings. While others have addressed the issue of the dominance of individual characteristics, the present analysis will focus on the issue of fixed returns—the assumption that economic returns to worker characteristics are uniform.

#### SECTORAL MODELS OF EARNINGS

With this in mind, we turn to models of sectoral economic differentiation derived from theories of economic dualism. Such theories encompass a diverse set of literature, diverse both in terms of disciplinary origins and intellectual orientations of the authors.<sup>3</sup> Among the perspectives which

fall within this group are theories of dual economy, dual labor markets, and labor force segmentation. Despite this diversity, there are certain common elements which characterize this approach and which differentiate it from neoclassical models. Primary among these is the proposal of a division of the industrial structure into distinct sectors (we will focus here on a two-sector model consisting of *core* and *periphery* sectors) within which employers and workers face fundamentally different conditions and operate according to fundamentally different rules.

Given this common emphasis on economic sectors there remain important variations in the definition and conceptualization of these sectors. Our approach is similar to that of Averitt (1968), Bluestone et al. (1973), and other writers in the dual economy tradition in that we conceptualize economic sectors as structural entities which derive from the nature of modern industrial capitalism (Beck and Horan, 1978). This usage differs from Piore (1975) and others in the dual labor market and labor force segmentation tradition who tend to define sectors, or segments, on the basis of the characteristics of labor markets and worker behavior (cf. Harrison, 1974; Spilerman, 1977). From our perspective, these labor market characteristics are seen as predictable outcomes of the sectoral structure, not as their defining characteristics.

In dual economy theory, the sectoral dichotomization is linked to the emergence during the late nineteenth and early twentieth centuries of a core industrial sector dominated by large corporate enterprises which came to constitute an oligopolistic system of production (Baran and Sweezy, 1966). The core sector thus is differentiated from the periphery sector which is characterized by smaller firms, operating in a more or less open, competitive capitalistic environment (Averitt, 1968). Bluestone et al. (1973:28–9) have summarized the characteristics of these two sectors of the economy as follows:

The core economy includes those industries that comprise the muscle of American economic and political power.... Entrenched in durable manufacturing, the construction trades and to a lesser extent, the extraction

<sup>3</sup> See Cain (1976) for a review of the literature.

industries, the firms in the core economy are noted for high productivity, high profits, intensive utilization of capital, high incidence of monopoly elements, and a high degree of unionization. What follows normally from such characteristics are high wages. The automobile, steel, rubber, aluminum, aerospace, and petroleum industries are ranking members of this part of the economy. Workers who are able to secure employment in these industries are, in most cases assured of relatively high wages and better than average working conditions and fringe benefits....

Beyond the fringes of the core economy lies a set of industries that lack almost all of the advantages normally found in center firms. Concentrated in agriculture, nondurable manufacturing, retail trade, and subprofessional services, the peripheral industries are noted for their small firm size, labor intensity, low profits, low productivity, intensive product market competition, lack of unionization, and low wages. Unlike core sector industries, the periphery lacks the assets, size, and political power to take advantage of economies of scale or to spend large sums on research and development.

Theories of dual economy suggest that these sectoral differences have important implications for the opportunity structures and experiences faced by individual workers. In the core sector, workers move within job structures characterized by differentiated task and wage schedules with often well-defined career patterns, i.e., internal labor markets (Doeringer and Piore, 1971; Spilerman, 1977). Formal education is widely used to mediate individual access to job ladders, and workers' wages "are largely determined by their respective access to different job clusters, by the relatively rigid pattern of wages attached to the job structures through which they respectively move, and by the speed with which they pass through those structures" (Gordon, 1972:50). In the peripheral sector, occupational opportunity structure is more restricted with a consequent dampening of task and wage variations. Gordon (1972:51) suggests that in this sector, "variation in individual hourly wages will depend very little on variations in individual 'capacities' like aptitude, reasoning and vocational skill."

If this sectoral specification of the structure of the socioeconomic order is correct, it has important implications for the

analysis of individual earnings data. Specifically it implies that those analyses of earnings determination which assume a homogeneous market condition (i.e., the absence of sectoral differentiation) and attempt to estimate the earnings returns to individual characteristics such as schooling, social background, and work experience, will produce results which are systematically biased through misspecification of the economic structure. If returns are different in the two sectors, then no single estimate of, say, the return to schooling, will suffice (Beck and Horan, 1978).

In providing a nonindividualistic alternative for the analysis of earnings, theories of the dual economy provide structural explanations for economic differences between racial and sexual groups. Rather than interpreting group differences in earnings or poverty as due to different rates of individual "failure" in a competitive market, the theory suggests that such group differences may be the outcome of differential assignments of group members within the sectoral structure of the economic order (Gordon, 1972; Tussing, 1975; Bluestone et al., 1973; Edwards et. al., 1975; Harrison, 1974).

The analysis which follows is addressed to an empirical evaluation of a sectoral model of earnings determination. In undertaking this analysis we will be seeking empirical answers to three critical questions:

- (1) Are there differences in the labor force composition of core and periphery sectors?
- (2) Can differences in individual earnings between sectors be accounted for in terms of characteristics of the individuals located within those sectors?
- (3) How similar are the processes of earnings determination for core and periphery sectors?

An affirmative answer to the first question would be consistent with the findings of Osterman (1975) and Bibb and Form (1977) that worker characteristics such as income, education, race, and sex vary between economic sectors. Nonetheless, earnings differences could still be accounted for by differences in the "qual-

ity" of labor as reflected by variation in individual skills, social background, and abilities. Questions two and three constitute a departure from recent analyses of economic sectors in that they permit an evaluation of the meaning of sectoral differences for the basic earnings processes. If individual earnings discrepancies continue to exist after relevant labor force variables have been controlled, then the concept of economic sector must be acknowledged to be more than just a shorthand measure for differences in labor force quality. If substantial sectoral differences are found in the process of individual earnings attainment, this would call into question those status attainment parameter estimates which are based on the implicit assumption that sectoral differences are of no consequence for individual attainment. Such findings would provide strong evidence that factors relating to the organization of the industrial economy must be included along with individual-level variables in models of socioeconomic attainment.

#### DESCRIPTION OF DATA AND VARIABLES

The data used in this analysis are derived from the National Opinion Research Center's General Social Surveys for 1975 and 1976 (Davis, 1975; 1976). Included in the analysis are persons who reported working full or part-time, not working because of temporary illness, a strike or annual leave, and those who were laid off or unemployed and seeking work. Of these 1,695 respondents, information on industrial classification was unavailable for 12 and these cases were deleted leaving an  $n$  of 1,683. Excluded from the analysis are inexperienced unemployed and persons not in the labor force, such as housewives, students, and retirees. The use of this natural random sample of the experienced civilian labor force represents a departure from traditional stratification studies in several respects. Both males ( $n=1,004$ ) and females ( $n=679$ ) as well as whites ( $n=1,512$ ) and nonwhites ( $n=171$ ) are included. Unemployed persons with work experience ( $n=120$ ) also are included in the analysis.

Researchers from "individualist" and

"structuralist" persuasions have typically differed in their choice of variables to include in models of earnings determination. Our analysis includes several variables which are characteristic of the individualist perspective. These include parental education<sup>4</sup> and parental occupational prestige<sup>5</sup> which may be viewed as measures of the background resources and socialization which a worker brings into the marketplace, years of age which may be interpreted as a proxy measure of labor market experience, and respondent's education which may be interpreted as an investment in future earnings. We have used two types of educational measures in the present study. In addition to the number of years of schooling completed, we have included a set of binary variables for the respondent's highest degree attained.<sup>6</sup> These binary variables will be used to measure the extent to which levels of educational certification have an impact on earnings beyond that of years of schooling.

Another set of variables included in our analysis may be open to interpretational disputes. Sex and race could be included directly within the human capital framework by assuming that sex and race differences reflect basic inequalities in job-related capabilities. Few sociologists would make such an assumption, so some researchers have treated earnings differences between the sexes and between racial groups as due to market imperfections or to discrimination in the otherwise open, competitive system of earnings determination. Analysts in the structuralist

<sup>4</sup> Parental education is taken as the years of schooling for the respondent's father. If this information is not available, the reported data on the mother's education is used. In the event that data are missing for both items, the mode of the distribution (eight years) is assigned.

<sup>5</sup> Parental occupational prestige is measured using father's occupational data. Substitution of scores for missing data on this prestige variable is accomplished by random assignment of one of the three modes of the distribution. NORC occupational prestige scores are utilized.

<sup>6</sup> There are four categories of degree attainment: (1) no high school diploma; (2) a high school diploma or junior college degree; (3) a bachelor's degree; and (4) a postgraduate degree. For the analysis presented here, the *no high school diploma* category is defined as the excluded category.

Table 1. Sectoral Classification of Industries

Core Sector	Periphery Sector
Mining	Agriculture, forestry, and fisheries
Construction	Durable manufacturing
Durable manufacturing	Lumber and wood products, except furniture
Stone, clay and glass products	Furniture and fixtures
Metal industries	Miscellaneous durable manufacturing
Machinery, except electrical	Nondurable manufacturing
Electrical machinery, equipment, and supplies	Food and kindred products
Transportation equipment	Tobacco manufactures
Professional and photographic equipment, and watches	Textile mill products
Ordnance	Apparel and other fabricated textile products
Nondurable manufacturing	Leather and leather products
Paper and allied products	Not specified nondurable manufacturing
Printing, publishing, and allied industries	Retail trade
Chemicals and allied products	Business and repair services
Petroleum and coal products	Personal services
Rubber and miscellaneous products	Entertainment and recreation services
Transportation	
Communications	
Utilities and sanitary services	
Wholesale trade	
Finance, insurance, and real estate	
Professional and related services	
Public administration	

tradition interpret the existence of sex and race differences in earnings as indicative of systematic forces involving differential opportunity structures which are embedded in the socioeconomic order.

A set of occupational variables which may be interpreted as characteristics of the market conditions encountered by an individual worker also are included in the model. These are occupational prestige, union membership, employment status, and work stability.<sup>7</sup> The indicator of work stability—whether or not the respondent has been unemployed in the last ten years—is a weak measure of job continuity, but it is the only such measure available from the NORC data.

A crucial variable in our analysis is the distinction between core and periphery

economic sectors. The importance of this variable warrants a more detailed consideration of our core/periphery measure and a comparison of this with other sectoral classifications. Following Bluestone and colleagues (1973), as quoted above, we allocate to the core sector those industries which exhibit high levels of capital intensity, unionization, large assets, high profit margins, product diversification, and market concentration (see Table 1). These include mining, construction, some durable and nondurable manufacturing, transportation, communications, utilities, wholesale trade, finance, professional services, and public administration.

Industries were assigned to the periphery sector because of their small firm size, seasonal and other variations in product supply and demand, labor intensity, weak unionization, and low assets—all characteristics which Bluestone et al. (1973) attribute to competitive capitalism. The periphery industries include agriculture, portions of durable and nondurable manufacturing, retail trade, business and repair, and personal and entertainment services.

The sectoral dichotomy used in this paper is related to the distinction used by

<sup>7</sup> It may seem unusual to have current unemployment status (employed or not employed) as an independent variable predicting the previous year's annual earnings since the respondent may or may not have been employed at that time. We are using current unemployment status, however, as an indicator of the vulnerability of the worker to changes in the demand for labor. The assumption is that, all other things equal, a worker who is currently unemployed is more likely to have been unemployed in the past. Cohn (1977) provides evidence of the reasonableness of this assumption.

Bibb and Form (1977) to classify blue-collar workers by economic sector. Our scheme is also related to Hodson's (1977) classification of industries into the three clusters suggested by O'Conner. O'Conner's (1973) neo-Marxist model of the economy posits that approximately one-third of the labor force can be found in each of three sectors: monopoly, competitive, and state.

Table A.1 in the Appendix contrasts the classificatory scheme used here with those of Bibb and Form and Hodson. While there are some differences in the sectoral placement of certain industries, there is consensus on the location of the majority. There are five instances in which our placement disagrees with both Bibb and Form and Hodson: printing, publishing, and allied industries; wholesale trade; finance, insurance, and real estate; professional and related services; and miscellaneous durable manufacturing. We allocated the first four of these industry clusters to the core sector, while Bibb and Form and Hodson placed them in the competitive periphery. We based this decision on tendencies toward oligopoly in the printing and publishing industries, the capital intensity of wholesale trade, the economic centrality of the finance industries as managers and brokers of capital wealth, and the strong control over the supply and prices of services exercised in the professions.

In the present analysis we treat the core/periphery distinction as being qualitative; that is, we assume that the two sectors are relatively internally homogeneous with respect to defining characteristics such as assets, market power, and the like. This is, of course, an oversimplification. However, if we can demonstrate the importance of this admittedly crude measure of differentiation in the economic structure, this will provide a rationale for work on a more refined measure of sectoral differentiation.<sup>8</sup>

The dependent variables in the analysis

<sup>8</sup> We currently are involved in a project designed to refine the sectoral classification scheme. This research will lead to a more precise, empirically-grounded definition of the core and periphery sectors.

are the natural logarithm of the respondent's annual earnings and a binary variable coded one for earnings below the single person poverty threshold as defined by the U.S. Bureau of the Census (1976:146). Figures for 1974 annual earnings and the poverty threshold are adjusted into 1975 dollar units by the Consumer Price Index.<sup>9</sup> Since earnings data were reported categorically, the midpoint of the response interval is used as a point estimate of the respondent's earnings. The midpoint for the highest, open-ended category (\$25,000 and over) was estimated by a Pareto approximation (Shryock and Siegel, 1975:366).<sup>10</sup>

#### ANALYSIS AND INTERPRETATION

To answer our first question—whether there are differences in the composition of core and periphery labor forces—the marginal characteristics of the two sectors are presented in Table 2. Core workers have larger, more homogeneous annual earnings than do their peripheral counterparts who have an average annual earnings disadvantage of \$3,057.97.<sup>11</sup> The degree of earnings inequality, as indexed by the Gini coefficient, is substantially larger in the periphery. Furthermore, the marginal probability of a peripheral worker having poverty earnings is more than twice that of the worker in the core, 0.3298 vs. 0.1564. Clearly, the economic position of workers in the peripheral sector is substantially inferior to that of workers in the core.

The human capital variables also exhibit substantial sectoral differences. Core workers, on the average, have more schooling, have better educational credentials, have parents who are better educated and with higher occupational status, and are more likely to be male and white than female and nonwhite. There is little

<sup>9</sup> The single person, aged 14 to 64, poverty threshold for the 1974 earnings data in the 1975 NORC survey is \$2,557.00. For the 1975 earnings reported in the 1976 NORC survey, the threshold is adjusted to \$2,761.00 on the basis of the change in the Consumer Price Index.

<sup>10</sup> Missing earnings data are assigned the modal value, \$12,500.

<sup>11</sup>  $\text{Exp}(8.5993) - \text{exp}(7.7706) = 3057.97$ .

Table 2. Means and Standard Deviations On Characteristics of 1,683 Workers in the Experienced Civilian Labor Force by Industrial Sector

Worker Characteristic	Industrial Sector		
	Core N=1125	Periphery N=558	t Ratio
Ln annual earnings	8.5993 (2.1148)	7.7706 (2.5628)	6.60**
Gini coefficient for earnings	0.397	0.524	—
Proportion poverty workers	0.1564 (0.3632)	0.3298 (0.4701)	-7.65**
Proportion female	0.3698 (0.4828)	0.4713 (0.4992)	-3.97**
Proportion nonwhite	0.0916 (0.2885)	0.1219 (0.3272)	-1.86*
Age for males <sup>1</sup>	39.63 (13.30)	38.81 (15.19)	0.81
Age for females <sup>2</sup>	37.91 (12.92)	39.45 (14.45)	-1.41
Years schooling	12.85 (2.97)	11.44 (2.79)	9.55**
Proportion with less than a high school diploma	0.2133 (0.4096)	0.3620 (0.4806)	-6.27**
Proportion with a high school or junior college degree	0.5556 (0.4969)	0.5556 (0.4969)	0.00
Proportion with a bachelor's degree but no more	0.1582 (0.3649)	0.0753 (0.2639)	5.32**
Proportion with a post-graduate degree	0.0729 (0.2599)	0.0072 (0.0845)	7.70**
Proportion employed less than full-time	0.1129 (0.3165)	0.2634 (0.4405)	-7.20**
Proportion currently unemployed	0.0729 (0.2600)	0.0681 (0.2519)	0.36
Proportion unemployed at least once in past ten years	0.3307 (0.4705)	0.3423 (0.4745)	-0.47
Hours per week normally worked on current job <sup>3</sup>	40.04 (11.65)	38.16 (16.05)	2.46**
Occupational prestige of current or last job	42.11 (14.10)	33.36 (11.64)	13.51**
Proportion belonging to a union	0.2969 (0.4569)	0.1380 (0.3449)	7.96**

Table 2. (Continued)

Worker Characteristic	Industrial Sector		
	Core N=1125	Periphery N=558	t Ratio
Parental years schooling	9.63 (3.93)	8.97 (3.70)	3.32**
Father's occupational prestige	39.65 (11.96)	38.41 (11.12)	2.10**

\* Significant at 0.10 level.

\*\* Significant at 0.05 level.

<sup>1</sup> N<sub>c</sub>=709; N<sub>p</sub>=295.<sup>2</sup> N<sub>c</sub>=416; N<sub>p</sub>=263.<sup>3</sup> Only for those currently employed and working: N<sub>c</sub>=1,004; N<sub>p</sub>=505.

evidence, however, to suggest significant sectoral differences in average age for either males or females.

In terms of occupational characteristics, core workers are more likely than periphery workers to be in higher prestige occupations, to be employed full-time, to work more hours per week, and to belong to a union. It is interesting to note that those in the periphery not only work fewer hours, but also exhibit a greater dispersion in hours worked. This greater variance in the length of the average work week reflects both the larger proportion of part-time jobs in the periphery and a greater variation in the demand for labor in the periphery sector. There are no significant differences between sectors in either the current unemployment rate for the experienced labor force or in the proportion of workers who have been unemployed at least once in the past ten years, a weak indicator of work stability. This lack of difference may be due more to an insensitivity of the empirical measures than to true similarities in the unemployment experiences of core and periphery workers.<sup>12</sup>

<sup>12</sup> The unanticipated statistical equality of unemployment between sectors deserves some additional comment since one of the explicit hypotheses of the dual economy perspective is that there will be a higher degree of unemployment and underemployment in the periphery. If the proportion of less than full-time employment is taken as a measure of underemployment, the data in Table 2 show that the sectoral hypothesis is confirmed, yet there is no evidence that the rate of unemployment differs between

It is evident from these summary data that there are statistically and substantively important differences in labor force composition, work experiences, and earnings between the core and periphery sectors. This juxtaposition of intersectoral differences in earnings and poverty with significant differences in labor force composition and work experiences is suggestive of the importance of sectoral distinctions and justifies a further inquiry into the implications of industrial segmentation.

While the data in Table 2 clearly substantiate the differences between the marginal characteristics of the labor force in core and periphery, two questions remain to be answered. Can the sectoral discrepancy in annual earnings and the likelihood of poverty be accounted for by the differences in the "quality" of the two labor forces? That is, are the economic differences between sectors merely a function of differences in their respective labor forces, or are there persistent discrepancies which cannot be explained by labor force differences? If controlling on the labor force characteristics eliminates sectoral discrepancies in economic status, then we can conclude that such sectoral disparities can be attributed to labor force differences. On the other hand, if the economic discrepancies continue after adjusting for worker characteristics, we can infer that there are structural factors which influence economic status over and above the differences in the labor forces.

The third question which our analysis must address is that of differences in the processes by which economic outcomes are determined in the two sectors. To what degree do the mechanisms which affect economic well-being operate differently in the core and periphery? Such differences in basic economic processes would appear in our analysis as interactions between the sectoral variable and various worker characteristics.

sectors. Since there is a high degree of seasonal variation in unemployment and inasmuch as the NORC surveys are conducted over a rather large span of time, typically in March and April, we cannot have great confidence in the reliability of the unemployment rates as given in Table 2. Hence, we do not take the sectoral equality in unemployment as strong disconfirming evidence.

To address these issues we regress annual earnings, in logarithmic form, and a binary variable for poverty earnings on sex, race, human capital, and occupational variables and a complete set of sectoral interaction terms—defined as the product of each independent variable and a binary variable for industrial sector.<sup>13</sup> The Chow test for the null hypothesis of no significant interactions produces F-ratios that are significant at the 0.01 level (see last line, Table 3).<sup>14</sup> To permit further examination of the differential rates of return, the null hypothesis of no difference between sectors is tested using conventional t-tests on the interaction terms. Variables with interaction terms significant at or above the 0.10 level are presented in Table 3 as having only sectorally unique effects. When the null hypothesis of no interaction cannot be rejected, a common slope based on the pooled regression for all workers is presented in addition. Hence, the findings displayed in Table 3 provide the information necessary to answer our second and third questions.

There are two related strategies for answering our second question: can sectoral differences be accounted for by differential labor force "quality"? First we can ask how much does it cost on an annual basis for the average worker to be located on the industrial periphery? Or in other words, how much would the average periphery worker gain if that worker were located in the core sector? If the sectoral differences we noted above are due to differences in labor force quality, the average periphery worker should not be substantially better off in the core. On the other hand, if sectoral placement has an importance which transcends labor force quality, the average periphery worker would be substantially better off in the core.

Using this strategy, we can compute an estimate of the cost of being in the periphery first by obtaining a predicted income

<sup>13</sup> For a more complex specification of an earnings function involving the human capital variables, see Mincer (1974:81–96).

<sup>14</sup> See Hanushek and Jackson (1977:124–9) for a discussion of the Chow test and related procedures.

Table 3. Sectoral Regressions on Average Annual Earnings and the Probability of Poverty Earnings

Worker Characteristic	Ln Annual Earnings			Poverty Earnings		
	Common	Sector-Specific Core	Periphery	Common	Sector-Specific Core	Periphery
Intercept		7.4268**	5.2473**		0.3512**	0.7187**
Sex (1=female)		-0.8232**	-0.1439	0.1898**	0.1313**	0.2813**
Race (1=nonwhite)		-0.4693**	0.3230	-0.0183	0.0089	-0.0812
Age for males	0.0208**	0.0219**	0.0174*		-0.0024**	0.0004
Age for females		0.0185**	-0.0039	-0.0017	-0.0016	-0.0015
Years of schooling		-0.0635	0.1479**	0.0005	0.0110	-0.0149
Highest degree						
High school or junior college		0.4767**	0.3089		-0.1012**	-0.1030*
Bachelor's degree		1.0397**	-0.6999		-0.1519**	0.0534
Postgraduate degree		1.4708**	1.2753		-0.2186**	-0.1187
Occupational prestige	0.0246**	0.0217**	0.0266**		-0.0044**	-0.0081**
Union member (1=yes)	0.6490**	0.5343**	0.7725**		-0.1135**	-0.2195**
Unemployed (1=yes)		-0.6972**	-1.9885**	0.1351**	0.1363**	0.1723**
Work stability (1=stable)	0.4677**	0.3776**	0.6234**		-0.0699**	-0.1469**
Years parental schooling		-0.0109	-0.0802**		0.0028	0.0222**
Parental prestige	-0.0047	-0.0044	-0.0027	-0.0003	0.0006	-0.0022
$\bar{R}^2 \times 100$		29.62			20.40	
F-ratio <sup>1</sup>		3.126			3.270	

\*Significant at the 0.10 level.

\*\* Significant at the 0.05 level.

<sup>1</sup> F-ratio for test of null hypothesis of no sectoral interactions,  $df=15, 1654$ .

based on applying the peripheral slopes in Table 3 to the means of the peripheral labor force, and then second by obtaining an expected income based on applying the core slopes in Table 3 to those same periphery means. This latter income is the expected annual earnings of the average periphery worker if that worker were in the core sector while the former is the income expected for the average periphery worker in the periphery. Subtracting these two expected incomes provides an estimate of the cost of being in the periphery for the average periphery worker. Using this procedure we find (see Table 4) that the periphery worker would gain

\$1,037.49 annually by being located in the core rather than in the periphery sector. Hence a change in sectoral placement without altering the racial, sexual, human capital, or occupational characteristics of the average periphery worker, would yield a substantial increase in annual earnings. Utilizing this same strategy but applying it to the poverty earnings equations, we find that the cost of being in the periphery (in terms of the probability of poverty earnings) is 0.0890. This means that if peripheral workers were in the core sector, they would have a poverty rate of 24.08% rather than their 32.98% rate (see Table 1). This 8.9 percentage point reduction indicates that the original sectoral discrepancy in poverty rates (17.34 percentage points) would be cut in half if peripheral workers received the same rates of return as their core sector counterparts.

Another strategy for answering our second question is closely related in that we ask how much benefit does the average core worker derive from being in the industrial core. Or alternatively, how much would the average core worker lose if that same worker were in the peripheral sector? Again, if the sectoral discrepan-

Table 4. Annual Costs and Benefits of Sectoral Location

Cost/Benefit	Dollars	Probability of Poverty Earnings
Cost of being in the periphery for the average peripheral worker	\$1,037.49	0.0890
Benefit of being in the core for the average core worker	\$979.46	0.0335

cies are due to differences in labor force quality, we should find that the average core worker obtains minimal benefit from being in the core sector.

To arrive at an estimate of this benefit, we first obtain an expected income based on evaluating the core slopes in Table 3 with respect to the means of the core labor force, and a second expected income derived by evaluating the periphery slopes with respect to those same core means. Subtracting these two expected incomes provides an estimate of the annual dollar benefit accruing to the average core worker for being in the core rather than in the periphery sector. Using this procedure, we find that the average worker's annual earnings are \$979.46 greater than they would be if a worker of the same quality was located in the periphery rather than in the industrial core. Applying this approach to the poverty earnings equations, we determine that one of the benefits of being in the core is a 0.0335 *reduction* in the probability of having poverty earnings relative to that expected if that same worker were in the periphery.

In sum, the findings noted in Table 4 indicate that there is a considerable cost borne by periphery workers over and above that which we can account for by the quality of that labor. Likewise, there is a substantial gain for workers in the core which cannot be explained by their labor force characteristics. Specifically, the data in Table 4 show that regardless of which sector is taken as the point of comparison, approximately one-third of the original \$3,057.97 sectoral earnings discrepancy is due to differences between sectors in the rates of return on worker characteristics while two-thirds of this gap is explainable by sectoral differences in labor force quality. These findings provide a clear answer to our second question: there are persistent sectoral differences in economic outcomes which cannot be explained by the racial, sexual, human capital, or occupational characteristics of their respective labor forces.

The answer to our third question—Are there sectoral differences in the processes by which economic outcomes are determined?—is clearly affirmative since the Chow test noted above is significant

for the annual earnings variable as well as for the poverty earnings variable. The findings presented in Table 3 indicate that the effects of some of the predetermining variables are sector-specific while others have a common effect in both sectors.<sup>15</sup> This demonstrates that the effects of some variables in the model are contingent upon the industrial sector in which the worker is located and thus disconfirms the fixed rate of returns hypothesis.

A detailed comparison of the slope coefficients in Table 3 reveals some interesting and statistically significant sectoral interactions in the earnings determination process. In the core there are significant negative effects of being female and being nonwhite on annual earnings. There are, however, no apparent sex or race main effects in the periphery. We consider this to be of substantial theoretical import and will return to this point for further discussion.

In both sectors increased age for males is associated with increased annual earnings, reflecting the cumulative effects of additional labor market experience. The absence of a sector-age interaction for males means that for each additional year of age, earnings will increase by the same *proportion* in each sector, but this does not indicate that there are no *real dollar* differences in these age effects. Since core workers have higher average earnings, the real dollar benefits due to increments in age are greater for males in the core industries than for those in the periphery. To the degree to which age is a proxy for labor market experience for females, it would appear that increased experience has no payoff in the periphery in contrast to the significant positive relationship between age and earnings for females in the core. This minimal gain realized from the accumulation of work experience may re-

<sup>15</sup> Since the dependent variable is expressed in logarithmic form, a partial slope represents the net proportionate change in annual earnings resulting from a unit increase in the predetermining variable. Since the average annual earnings in the core sector is greater than the average in the periphery, the real dollar increase due to a unit change in the predetermining variable will be larger for core industry workers even though some of the rates of return are common to both sectors.

sult from females being disproportionately assigned to the low-skill jobs which characterize the periphery. Such jobs have flat learning profiles such that there is little or no increase in worker productivity with increased job experience (Harrison, 1974).

Turning to education we see that schooling, net of degree levels, has an important positive effect on annual earnings in the periphery but no significant effect in the core. In contrast, the net effects of levels of degree attainment are significant and positive in the core but nonsignificant in the periphery. This suggests the hypothesis that earnings return to education in the core sector rests on the acquisition of a formal degree, whereas in the peripheral sector economic benefits are derived from additional years of schooling, not from increases in formal levels of certification.

An examination of the occupational variables indicates that higher occupational prestige, union membership, and stable work all make significant contributions to higher annual earnings. In each sector these variables operate in a similar manner in the sense that there are no sectoral differences in the *proportional* increase in earnings. In terms of real dollar earnings, however, the benefits of high occupational prestige, employment, work stability, and union membership are greater for those employed by core industry firms than for those working in the periphery. Finally, while it might be expected that the social background variables would have a direct influence on economic status, we find little evidence of such effects. There is a very small negative relationship between parental schooling and annual earnings in the periphery, but this effect does not exist in the core. Parental occupational prestige has no demonstrable direct influence in either sector.

While annual earnings is an important measure of overall economic well-being, the dual economy literature has placed special emphasis on the lower range of the earnings distribution (see e.g., Gordon, 1972; Tussing, 1975; Piore, 1977). Table 3 presents the effects of the individual and occupational variables on the probability that a worker will have annual earnings

below the poverty threshold.<sup>16</sup> There are important differences between economic sectors in the effects of worker characteristics on poverty earnings.

In both sectors female workers have a greater probability of being poor than do male workers. Contrary to our findings in the earnings equation, there is no empirical evidence in either sector that nonwhite workers are any more likely to be poor than white workers. Of course, this only represents the absence of a *net* effect of race. Since marginally a nonwhite worker is 1.3 times more likely to be poor than a white worker, the lack of a significant race effect indicates that there are no race effects after controlling on sector, occupational, and human capital variables.<sup>17</sup>

The age effect for males has a significant negative impact on the probability of poverty earnings in the core, while it is nonsignificant in the periphery. There is no evidence that increased age has any measurable influence for females in either sector. Thus, additional years of age, and presumably, increased work experience reduce the likelihood of poverty only for males in the core sector. Core female workers and all periphery workers have a greater risk of earnings below the poverty threshold, but this risk is unaffected by age. In general we find that the schooling variable has no effect on poverty earnings in either sector. The degree certification variables, however, tend to reduce the likelihood of poverty for those employed in the core sector. In the periphery, only the high school/junior college degree variable has a significant effect on poverty, while years of education per se has no such effect.

The "costs" of occupying a low prestige occupation, of not belonging to a union, and of work instability are significantly higher in the periphery than in the core, although the effects are significant in

<sup>16</sup> There are certain technical difficulties present when estimating a regression with a binary dependent variable. One of these is that the assumption of homoscedasticity is difficult, if not impossible, to meet. Therefore, the t-ratios and F-ratios resulting from the poverty earnings regression must receive a cautious interpretation.

<sup>17</sup>  $\Pr(\text{Poor/Nonwhite}) = 0.2690$  and  $\Pr(\text{Poor/White}) = 0.2077$ .

both. These differential effects on poverty earnings may reflect the absence of social mechanisms by which wage rates and work continuity are protected in the periphery. The fact that union membership is the single most important factor in reducing the likelihood of poverty earnings for a worker in the peripheral sector provides further support for this interpretation. In both sectors, being unemployed increases the probability of poverty by a significant degree.

These findings provide striking evidence for the importance of sectoral segmentation of the American economic system. Not only can sectoral differences in economic outcomes not be reduced to differential labor force quality, these sectoral differences serve to condition the impact of both human capital and occupational variables. Even more striking are the findings concerning the interactions between economic sector, race, and sex. Non-whites and women face significant earnings disadvantages in the core, but not in the periphery. That is, in the periphery sex and race groups face no disadvantage except for the sectoral disadvantage which they share with white males.

One response to these findings by human capital researchers, who generally restrict their analysis to employed white males, might be that our analysis has confounded exogenously-determined racial and sexual effects with sectoral differences. This would imply that our findings could not be replicated for full-time employed white males. To address this issue, we repeat the analysis above for white, full-time employed males ( $N_{\text{core}} = 523$ ,  $N_{\text{periphery}} = 193$ ).<sup>18</sup>

Computing the marginal characteristics for these white males, we find the earnings disadvantage for labor in the periphery to be a statistically significant \$5,155.81 which is substantially larger than the marginal disadvantage noted in Table 2 for all peripheral workers, \$3,057.97. Similarly we find that the currently full-time employed white male in the periphery is 3.18

Table 5. Annual Costs and Benefits of Sectoral Location For Full-Time Employed White Males

Cost/Benefit	Dollars	Probability of Poverty Earnings
Cost of being in the periphery for the average peripheral worker	\$4,097.51	0.0880
Benefit of being in the core for the average core worker	\$2,903.56	0.0413

times more likely to have poverty-level earnings than is his core counterpart. These two summary statistics indicate that the economic impact of the sectoral distinction is *more* pronounced among employed white males than among workers in general.

Replicating the regression analysis for this subset of workers, we applied the Chow test for the null hypothesis of no sectoral interaction to the regressions for the annual earnings and poverty earnings variables and in both instances we were able to reject the null hypothesis at the 0.01 level of significance.<sup>19</sup> Hence, there is strong empirical evidence supporting the hypothesis that the process of earnings determination differs between sectors even when the analysis is restricted to full-time employed white males.

In order to determine whether sectoral differences can be attributed to variation in labor force quality, we estimate the costs and benefits of sectoral location for the average full-time employed white male in each sector. Using procedures analogous to those described in detail previously, we find (Table 5) that it costs the average white male in the periphery \$4,097.51 annually to be in the periphery. That is, if that same male were in the core we would anticipate an annual gain in earnings of that amount. For the average full-time employed white male in the industrial core, we estimate that sectoral placement yields an annual benefit of

<sup>18</sup> Because of space limitations we have not presented either the marginal distributions or regression coefficients for the full-time employed white males. These are available from the first author.

<sup>19</sup> The F-ratio for the earnings equation is 2.716 with 11 and 695 degrees of freedom. For the poverty earnings equation,  $F = 3.977$  with 11 and 695 degrees of freedom.

\$2,903.56 over and above the earnings expected if that male had been located in the periphery. In addition to these dollar costs and benefits, we note that there are small costs and benefits in the probability of having poverty-level earnings associated with sectoral placement.

Comparing the costs and benefits of sectoral location for full-time employed white males (Table 5) with the costs and benefits for all workers (Table 4), we find that the dollar costs of being in the periphery sector and dollar benefits of being in the core sector are substantially greater for white males than for workers in general. This is consistent with the hypothesis that minorities are differentially channeled into the periphery where the rate of return on their already lower average stock of human capital is less. Those white males who find themselves in the economic periphery apparently are evaluated in a similar fashion to these minorities, hence the sectoral penalty paid by full-time employed white males is particularly heavy. This interpretation is consistent with the lack of race and sex main effects in the periphery which we noted in Table 3. If the peripheral white males had been employed in the core they would have gained from not only the higher rate of return on human capital and occupational variables, but also from the racial and sexual earnings discrimination found in that sector.

In sum, the findings reported in Table 5 are quite unambiguous in support of the position that even among full-time employed white males, sectoral placement makes a critical difference in economic well-being above and beyond the effects of differences in labor force quality. This persistent disparity must be attributed to the structural organization of the industrial economy.

#### CONCLUSIONS

Our analysis examines the existence and the importance of industrial sectors, as hypothesized by the dual economy literature, on the process of earnings determination. Since the status attainment and neoclassical income models rest on the assumption of labor market homogeneity, our efforts to test a theoretically-derived

model of nonhomogeneity are of direct relevance for those research traditions. Using a distinction between core and periphery industrial sectors derived from Bluestone et al., (1973) we address our analysis to three basic questions: (1) Are there significant differences in the economic status and composition of the core and periphery labor forces? (2) Can sectoral differences in economic status be reduced to differences in the quality of their respective labor forces? And, (3) to what degree are the economic returns to sex, race, human capital, and occupation-labor force variables the same in both sectors?

The analysis provides clear answers to all three questions. The core and periphery sectors *do* exhibit significant differences in both earnings levels and in labor force composition. The sectoral differentials in earnings *cannot* be explained away by differences in labor force quality. The relationships between earnings and human capital as well as occupation-labor force variables *do* differ significantly between core and periphery sectors. Whether considering the biologically-fixed attributes of race and sex, the human capital variables, or the occupation-labor force variables, we find that the real dollar returns on these worker characteristics are greater in core industries than in periphery industries.

The importance of these findings for the neoclassical research tradition in stratification should be clear. In face of strong empirical evidence contrary to the implicit tenet of labor market homogeneity, parameter estimates which are conditional on this assumption can no longer be treated as appropriate bases for the construction of sociological theory or social policy. Such simplistic models lead to a serious misspecification and misrepresentation of the social processes underlying individual earnings determination. In contrast, the notion of economic sectors appears to hold substantial promise as a theoretical concept and as an exemplar for a research program aimed at identifying structural aspects of the socioeconomic order.

We further contend that the sectoral model employed here constitutes an essential element in understanding the proc-

ess of discrimination against minority groups in that it includes not only individual factors but also the organization of the economic structure.<sup>20</sup> Specifically, despite the differential representation of females and nonwhites in the peripheral sector, there is no statistically significant evidence of earnings discrimination in that sector after controlling on the predetermining variables. In the core sector, however, there is evidence of significant adverse race and sex main effects on earnings even after controlling on human capital and occupational variables. This is not to suggest that the sectoral distinction is only relevant for minority group members. Quite the contrary, our analysis for the subsample of full-time employed white males indicates that the sectoral disadvantages in both earnings and the likelihood of poverty earnings are *higher* for this group than for the experienced civilian labor force as a whole. Hence, we find support for the dual economy perspective regardless of whether interest is focused on workers in general or is restricted to the primary labor force of full-time employed white males.

What does all of this mean? It means that we should be very suspicious of any attempts to build models of occupational or earnings processes in industrial society

which consist exclusively of individual-level variables. Our analysis suggests that the rules which govern the distribution of socioeconomic benefits to individual workers are not uniform across all sectors of the economy. Analysts in the human capital and status attainment tradition have tended to interpret income and status differences as due to the application of a fixed set of rates-of-return to different mixes of individual background characteristics, skills, and experience. We have shown that these rates-of-return are not fixed, and that one important determinant of their variability is a distinction between core and periphery sectors derived from theories of the structure of industrial capitalism. In our view these findings constitute a challenge to models of the social and economic order which underlie the human capital and status attainment research traditions. While we would be the first to acknowledge the primitive character of our dichotomous model of sectoral differentiation, we see the present analysis as a starting point for a type of research which will link individual socioeconomic behavior to models of industrial structure.

APPENDIX

Table A.1 presents the sectoral classification used in this paper along with those adopted by Bibb and Form (1977) and Hodson (1977). For a comparison of these schemes see the body of the text. Items designated with a question mark represent industries where the sectoral location was ambiguous.

<sup>20</sup> In further research we are pursuing the implications of industrial segmentation for race and sex discrimination using data on a sample of the experienced civilian labor force from the 1976 Current Population Survey (March supplement).

Table A.1. Sectoral Classifications

Industry Group	Present Analysis	Bibb-Form (1977)	Hodson (1977)
Agriculture, forestry and fisheries	Periphery	Excluded	Periphery
Mining			
Metal mining	Core	Core	Core
Coal mining	Core	Core	Core
Crude petroleum and natural gas	Core	Core?	Core
Nonmetallic mining and quarrying	Core	Core	Periphery
Construction	Core	Core	Core
Durable Manufacturing			
Lumber and wood products	Periphery	Core	Periphery
Furniture and fixtures	Periphery	Core	Periphery
Stone, clay, and glass products	Core	Core	Core
Metal industries	Core	Core	Core
Machinery, except electrical	Core	Core	Core
Electrical machinery, equipment, supplies	Core	Core	Core
Transportation equipment	Core	Core	Core

Table A.1. (Continued)

Industry Group	Present Analysis	Bibb-Form (1977)	Hodson (1977)
Professional and photographic equipment	Core	Core	Core
Ordnance	Core	Core	Core
Miscellaneous durable manufacturing	Periphery	Core	Core
Nondurable Manufacturing			
Food and kindred products	Periphery	Periphery	Core
Tobacco manufacturers	Periphery	Periphery	Core
Textile mill products	Periphery	Periphery	Periphery
Apparel and other fabricated textiles	Periphery	Periphery	Periphery
Paper and allied products	Core	Periphery	Core
Printing, publishing and allied industries	Core	Periphery	Periphery
Chemicals and allied products	Core	Core	Core
Petroleum and coal products	Core	Core	Core
Rubber and miscellaneous plastic products	Core	Core	Core
Leather and leather products	Periphery	Periphery?	Periphery
Not specified nondurable manufacturing	Periphery	Periphery?	Periphery
Transportation			
Railroads and railway express service	Core	Core	Core
Street railways and bus lines	Core	Core	Periphery
Taxicab service	Core	Core	Periphery
Trucking service	Core	Core	Periphery
Warehousing and storage	Core	Core	Periphery
Water transportation	Core	Core	Periphery
Air transportation	Core	Core	Core
Petroleum and gasoline pipelines	Core	Core	Periphery
Services incidental to transportation	Core	Core	Periphery
Communications			
Radio broadcasting and television	Core	Core	Periphery
Telephone (wire and radio)	Core	Core	Core
Telegraph (wire and radio)	Core	Core	Core
Utilities and sanitary services			
Electric light and power	Core	Core	State
Gas, steam and supply systems	Core	Core	State
Electric-gas utilities	Core	Core	State
Water supply	Core	Core	Periphery
Sanitation services	Core	Core	Periphery
Other not specified utilities	Core	Core	Periphery
Wholesale trade	Core	Periphery	Periphery
Retail trade	Periphery	Periphery	Periphery
Finance, insurance, and real estate	Core	Periphery	Periphery
Business and repair services	Periphery	Periphery	Periphery
Personal services	Periphery	Periphery	Periphery
Entertainment and recreation services	Periphery	Periphery	Periphery
Professional and related services	Core	Periphery	Periphery
Public administration	Core	Core	State

## REFERENCES

- Althausen, Robert P. and Arne L. Kalleberg  
 1977 "Occupational and firm labor markets: toward a specification of structural factors in wage attainment." Paper presented at the annual meeting of the American Sociological Association, Chicago.
- Averitt, Robert T.  
 1968 *The Dual Economy: The Dynamics of American Industry Structure*. New York: Horton.
- Baran, Paul A. and Paul M. Sweezy  
 1966 *Monopoly Capital*. New York: Monthly Review Press.
- Beck, E. M. and Patrick M. Horan  
 1978 "The structure of American capitalism and status attainment research: a reassessment of contemporary stratification theory." Unpublished paper, Department of Sociology, University of Georgia, Athens.
- Becker, Gary S.  
 1964 *Human Capital*. New York: National Bureau of Economic Research.
- Bibb, Robert and William H. Form  
 1977 "The effects of industrial, occupational,

- and sex stratification on wages in blue-collar markets." *Social Forces* 55:974-96.
- Bluestone, Barry, William M. Murphy, and Mary Stevenson  
1973 *Low Wages and the Working Poor*. Ann Arbor: Institute of Labor and Industrial Relations, University of Michigan.
- Cain, Glen G.  
1976 "The challenge of segmented labor market theories to orthodox theory." *Journal of Economic Literature* 14:1215-57.
- Cohn, Richard M.  
1977 *The Consequences of Unemployment on the Self*. Ph.D. dissertation, Department of Sociology, University of Michigan, Ann Arbor.
- Davis, James A.  
1975 *National Data Program for the Social Sciences: Codebook for the Spring 1975 General Social Survey*. Chicago: National Opinion Research Center.  
1976 *National Data Program for the Social Sciences: Codebook for the Spring 1976 General Social Survey*. Chicago: National Opinion Research Center.
- Davis, Kingsley and Wilbert E. Moore  
1945 "Some principles of stratification." *American Sociological Review* 10:242-9.
- Doeringer, Peter B. and Michael J. Piore  
1971 *Internal Labor Markets and Manpower Analysis*. Lexington: Heath.
- Duncan, Otis D., David Featherman, and Beverly Duncan  
1972 *Socioeconomic Background and Achievement*. New York: Seminar Press.
- Edwards, Richard C., Michael Reich, and David M. Gordon  
1975 *Labor Market Segmentation*. Lexington: Heath.
- Gordon, David M.  
1972 *Theories of Poverty Underemployment*. Lexington: Heath.
- Grandjean, Burke D.  
1975 "An economic analysis of the Davis-Moore theory of stratification." *Social Forces* 53:543-52.
- Hanushek, Eric A. and John E. Jackson  
1977 *Statistical Methods for Social Scientists*. New York: Academic Press.
- Harrison, Bennett  
1974 "The theory of the dual economy." Pp. 269-87 in Bertram Silverman and Murray Yanowitch (eds.), *The Worker in "Post Industrial" Capitalism*. New York: Free Press.
- Hauser, Robert M. and David L. Featherman  
1977 *The Process of Stratification: Trends and Analyses*. New York: Academic Press.
- Hodson, Randy D.  
1977 *Labor Force Participation and Earnings in the Core, Peripheral, and State Sectors of Production*. M. A. thesis, Department of Sociology, University of Wisconsin, Madison.
- Horan, Patrick M.  
1978 "Is status attainment research atheoretical?" *American Sociological Review* 43:334-41.
- Hudis, Paula M. and Arne L. Kalleberg  
1977 "Labor market structure and sex differences in occupational careers." Paper presented at the annual meeting of the American Sociological Association, Chicago.
- Kalacheck, Edward and Frederick Raines  
1976 "The structure of wage differentials among mature male workers." *Journal of Human Resources* 35:484-506.
- Mincer, Jacob  
1974 *Schooling, Experience, and Earnings*. New York: National Bureau of Economic Research.
- O'Connor, James  
1973 *The Fiscal Crisis of the State*. New York: St. Martin's.
- Osterman, Paul  
1975 "An empirical study of labor market segmentation." *Industrial and Labor Relations Review* 28:508-23.
- Parsons, Talcott  
1940 "An analytical approach to the theory of social stratification." *American Journal of Sociology* 45:841-62.
- Pease, John, William H. Form, and Joan H. Rytina  
1970 "Ideological currents in American stratification literature." *American Sociologist* 5:127-37.
- Piore, Michael  
1975 "Notes for a theory of Labor Market stratification." Pp. 125-50 in Richard C. Edwards, Michael Reich, and David M. Gordon (eds.), *Labor Market Segmentation*. Lexington: Heath.  
1977 "The dual labor market: theory and implications." Pp. 93-7 in D. M. Gordon (ed.), *Problems in Political Economy: An Urban Perspective*. Lexington: Heath.
- Sewell, William H. and Robert M. Hauser  
1975 *Education, Occupation and Earnings: Achievement in the Early Career*. New York: Academic Press.
- Shryock, Henry and Jacob S. Siegel  
1975 *The Methods and Materials of Demography*. Washington, D.C.: U.S. Government Printing Office.
- Spilerman, Seymour  
1977 "Careers labor market structure, and socioeconomic achievement." *American Journal of Sociology* 93:551-93.
- Stolzenberg, Ross M.  
1975 "Occupations, labor markets and the process of wage attainment." *American Sociological Review* 40:645-65.
- Thurow, Lester C.  
1975 *Generating Inequality*. New York: Basic Books.
- Tussing, A. Dale  
1975 *Poverty in a Dual Economy*. New York: St. Martin's.
- U.S. Bureau of the Census  
1976 "Characteristics of the population below the poverty level: 1974." *Current Population Reports, Series P60, No. 102*. Washington, D.C.: U.S. Government Printing Office.